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varying much in size, and found almost everywhere in moist situations. "In the manufacture of the handsome Tunbridge ware, a variety of wood is employed under the name of green oak. Although of a mineral green color, this is the ordinary British oak; but the alteration which it has undergone is due to the presence of a fungus. A handsome little species resembling a *Pezizia* traverses with its mycelium the whole fabric of such wood, and these minute threads give the green tint to the timber." Similar tinted but decayed sticks and pieces of timber may be found in our own woods, owing doubtless to a similar cause.

In conclusion, it is to be hoped that the coming season may be seized upon for collecting, delineating, and coloring from living specimens some of the many fine and curious species of this vicinity; and that our naturalists may institute experiments, aided by the chemist and the gastronomer, in this line of wholesome, novel, and dainty tidbits of the table.

SPONGES.

BY A. HYATT.

AMONG the dark-brown leaves and green filaments which are borne upon the edge of the incoming tide, one frequently observes a substance hardly distinguishable from the surrounding plants, except for its light-brown color and porosity. This is sometimes dendritic,* with lank branches springing from broad, thick-spreading bases; but generally it is broken into fragments, and only the palm-like parts, with their finger-shaped ends, are left grasping among the froth-covered sea-weeds. A slight pressure will expel the water, and the aspect of the half-dried specimen will at once arrest attention.

It is in fact a Sponge, differing only in the details of its structure and its general form from the sponges of commerce. The latter, whose irregular swelling outlines are so familiar to us, are of foreign origin, the better kinds coming from the more eastern shores of the Mediterranean, the coarser and larger kinds from the Bahamas. The commercial value of these is based upon the horny nature and closely interwoven texture of their internal skeleton.

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* Branching like a tree.

A sponge is, typically, a gelatinous mass, in which is imbedded numerous little spikes and plates, of a horny, calcareous, or siliceous substance; or hair-like threads of various forms, which are so thickly disposed and closely knit together by animal matter, that they form a sort of open-work frame supporting the looser tissues.

In the common sponge this frame-work is wholly composed of horny hairs, which are so densely packed and elastic that they immediately resume their original shape after being compressed. The gelatinous matter is in all cases cleaned out after the sponge is torn up from its rocky bed, and those which we utilize are only the horny skeletons of the living animals. So loosely constructed and fragile, however, are the large branching species of our own coast, that a dried specimen may be crushed to powder in the hand.

The exterior of our beach specimens have a furry look, due to the projecting points of the spiculæ, which protrude through the outer skin. Scattered holes of considerable size reveal portions of the interior, and between them are innumerable smaller pores. These larger apertures connect with distinct channels which ramify through the mass in all directions, and, when surrounded by their native element, expel continuous jets of water. In fact the whole is only an apparatus for absorbing and ejecting sea-water, well deserving its old name of sea-lungs.

The surrounding liquid is taken in through the smaller pores of the outer side, and, passing through the lung-like interstices of the structure, is finally collected in the main channels and thrown out again, together with quantities of feculent matter through the larger openings. The meshes of the sieve and the channels are thickly lined with myriads of microscopical animalculæ, to which the perpetual current bears their minute food, sifted of all the coarse, unsuitable particles, and maintains an invigorating supply of fresh sea-water throughout the whole colony. The animals themselves create this current by the motion of ciliæ, or little hairs, which grow out from the region of the mouth. The form of their bodies has been ascertained in only one species, called *Leucosolenia botryoides*. In this, which is quite small, though common on the shore, Professor H. J. Clark found that they were minute sac-shaped beings, with a collar projecting from the free end, in the middle of which was the mouth, situated at the base of a long filament which was hardly ever at rest. It seemed to be employed principally in casting morsels of food down into the mouth, and this action, in itself so slight, is yet, when carried on by the thousands of neighboring filaments, sufficient to keep the fluids in rapid motion through the meshes.

Until of late years the animal nature of the sponge was disputed. Then it was referred to the Amæba forms, creatures which are mere sprawling drops of jelly, without mouths or stomachs, but which, however, manage to move about, and even in some species build up most elaborate internal structures resembling minute shells. Now, through the investigations of Professor H. J. Clark, we know that they are colonies of such comparatively highly organized beings as those I have described, and we are also able to state, upon the same authority, that their young are free, roving globules, resembling an isolated individual of the parent stock.

The mode of growth has not been studied in the sponge itself, but in a closely allied animal where a number of little bells grow upon a stem (*Codosiga pulcherrima*). The young of this is free at first, but finally attaches itself, and becomes elevated on a pedicle. Then the vase grows more oval, the opposite sides at the narrowest diameter approach each other, coalesce and split, dividing all the internal organs, and the mouth and calyx, or collar, into two parts. Two other filaments grow up from these halves, and a fissure begins in the disk, which gradually spreads both upward and downward, until two transparent vases, complete in structure, swing upon the trunk which bore only one an hour before. This process in some species is continued until quite a cloud of descendants cluster around the parent branch, but in others, again, only separate and distinct individuals are produced, the division totally separating the stem as well as the body.

The sponge, probably, grows in the same way; but the vases, having no stems, remain attached side by side, and secrete the gelatine and spiculæ, or horny hairs, from the lower surfaces of their bodies. These support the membrane and enable it to maintain a definite outline, and continue its growth without the danger of collapsing.

There are several species on our coast, but the most noticable is the great Halichondria, whose favorite resort is an old wharf-pile. This may not seem an attractive object, but Nature has clothed the whole coast with her living tapestries, and even here, her taste is as faultless, and her hand as lavish in decoration, as in more favored and sunnier spots.

Get into your boat, and when the tide is lowest float down under the wharves through which the current has a clean sweep. The waves lift the dank bladder-weeds and long green sea-hair which cover their stained sides, while below these, brown clusters of mussel-shells open their fringed mouths, and huge anemones, as thick as your arm, spread their laced crowns of white, brown, crimson, or variegated colors on the water-worn logs; and in the midst our great sea-lungs hangs out its mass of branches, and spreads its weird fingers up towards the observer. Even the sponge is beautiful in such places and with such associations.